CIVL 551 Foundation Engineering Fall 2007

PS #6 Due: 11/5/07

Objectives

1. To determine by hand calculation the required length, width, thickness and reinforcing of a combined spread footing that will carry two column loads.

2. To repeat the procedure using a Winkler foundation and the Finite Element Method to analyze the same combined spread footing as in part 1 and perform design using the results.

3. Compare to F2K. http://www.spydersoftware.com/f2k_ftp/F2KDemo.exe

The Problem

The combined footing shown below will carry the vertical loads as indicated. The loads are delivered to the footing with square columns.

Column Data:
- C1 = 24" x 24"
- C2 = 24" x 24"
- DL1 = 75k
- LL1 = 100k
- DL2 = 120k
- LL2 = 180k
- f'c = 3,000 psi
- fy = 60,000 psi
- Column Steel = 4-#11bars

Footing Data:
- A = 3'
- B = 24'
- f'c = 2,500 psi
- fy = 60,000 psi

Soil Data:
- q-allow = 2.5 ksf